

WHAT IS CLAIMED IS:

1. A transmission method comprising the steps of:  
generating a reference clock signal;

sequentially outputting spread data at a specified timing synchronized with the reference clock, wherein the spread data results from directly spreading transmission data with a spreading code;

distributing the spread data into two sequences of data at a specified timing synchronized with the reference clock;

generating a first pulse shaping signal at a specified timing synchronized with the reference clock;

generating a second pulse shaping signal at a specified timing synchronized with the reference clock;

generating a cosine carrier and a sine carrier;

multiplying one of the two sequences of data, the first pulse shaping signal, and the cosine carrier together;

multiplying the other of the two sequences of data, the second pulse shaping signal, and the sine carrier together;  
and

synthesizing outputs from the multiplications to acquire an output signal for transmission.

2. The transmission method according to claim 1, further comprising the steps of:

as multiplication among one of the two sequences of data, the first pulse shaping signal, and the cosine carrier together,

multiplying the first pulse shaping signal and the cosine carrier together and multiplying a resulting multiplied signal and one of the two sequences of data together; and

as multiplication among the other of the two sequences of data, the second pulse shaping signal, and the sine carrier together,

multiplying the second pulse shaping signal and the sine carrier together and multiplying a resulting multiplied signal and the other of the two sequences of data together.

3. The transmission method according to claim 1, further comprising the steps of:

as multiplication among one of the two sequences of data, the first pulse shaping signal, and the cosine carrier together,

multiplying one of the two sequences of data and the first pulse shaping signal together and multiplying a multiplication output and the cosine carrier together; and

as multiplication among the other of the two sequences of data, the second pulse shaping signal, and the sine carrier together,

multiplying the other of the two sequences of data and the second pulse shaping signal together and multiplying a multiplication output and the sine carrier together.

4. The transmission method according to claim 1, further comprising the steps of:

as multiplication among one of the two sequences of data, the first pulse shaping signal, and the cosine carrier together,

multiplying one of the two sequences of data and the cosine carrier together and multiplying a multiplication output and the first pulse shaping signal; and

multiplying the other of the two sequences of data and the second pulse shaping signal together and multiplying a multiplication output and the sine carrier together.

5. The transmission method according to claim 1, further comprising the step of:

acquiring the first and second pulse shaping signals by shifting a pulse, having a cycle equivalent to a specified multiple of the reference clock signal, to a plurality of phases and by adding the multi-phase pulses.

6. A transmitter comprising:

a clock generation means for generating a reference clock signal;

a spread data output means for sequentially outputting spread data at a specified timing synchronized with the reference clock, wherein the spread data results from directly spreading transmission data with a spreading code;

a distribution means for distributing the spread data into two sequences of data at a specified timing synchronized with the reference clock;

a first pulse shaping signal generation means for generating a first pulse shaping signal at a specified timing synchronized with the reference clock;

a second pulse shaping signal generation means for generating a second pulse shaping signal at a specified timing synchronized with the reference clock;

a carrier generation means for generating a cosine carrier and a sine carrier;

a first multiplication means for multiplying one of the two sequences of data, the first pulse shaping signal, and the cosine carrier together;

a second multiplication means for multiplying the other of the two sequences of data, the second pulse shaping signal, and the sine carrier together; and

a synthesis means for synthesizing multiplication outputs from the first and second multiplication means.

7. The transmitter according to claim 6,

wherein the first multiplication means comprises a multiplication means for multiplying the first pulse shaping signal by the cosine carrier and another multiplication means for multiplying multiplication output from the multiplication means by one of the two sequences of data; and

wherein the second multiplication means comprises a multiplication means for multiplying the second pulse shaping signal by the sine carrier and another multiplication means for multiplying multiplication output from the multiplication means

by the other of the two sequences of data.

8. The transmitter according to claim 6,

wherein the first multiplication means comprises a multiplication means for multiplying one of the two sequences of data by the first pulse shaping signal and another multiplication means for multiplying multiplication output from the multiplication means by the cosine carrier; and

wherein the second multiplication means comprises a multiplication means for multiplying the other of the two sequences of data by the second pulse shaping signal and another multiplication means for multiplying multiplication output from the multiplication means by the sine carrier.

9. The transmitter according to claim 6,

wherein the first multiplication means comprises a multiplication means for multiplying one of the two sequences of data by the cosine carrier and another multiplication means for multiplying multiplication output from the multiplication means by the first pulse shaping signal; and

wherein the second multiplication means comprises a multiplication means for multiplying the other of the two sequences of data by the sine carrier and another multiplication means for multiplying multiplication output from the multiplication means by the second pulse shaping signal.

10. The transmitter according to claim 6,

wherein the first and second pulse shaping signal generation means comprise:

a clock count means for shifting a pulse, having a cycle equivalent to a specified multiple of the reference clock signal, to a plurality of phases; and

an addition means for adding multi-phase pulses output from the clock count means.